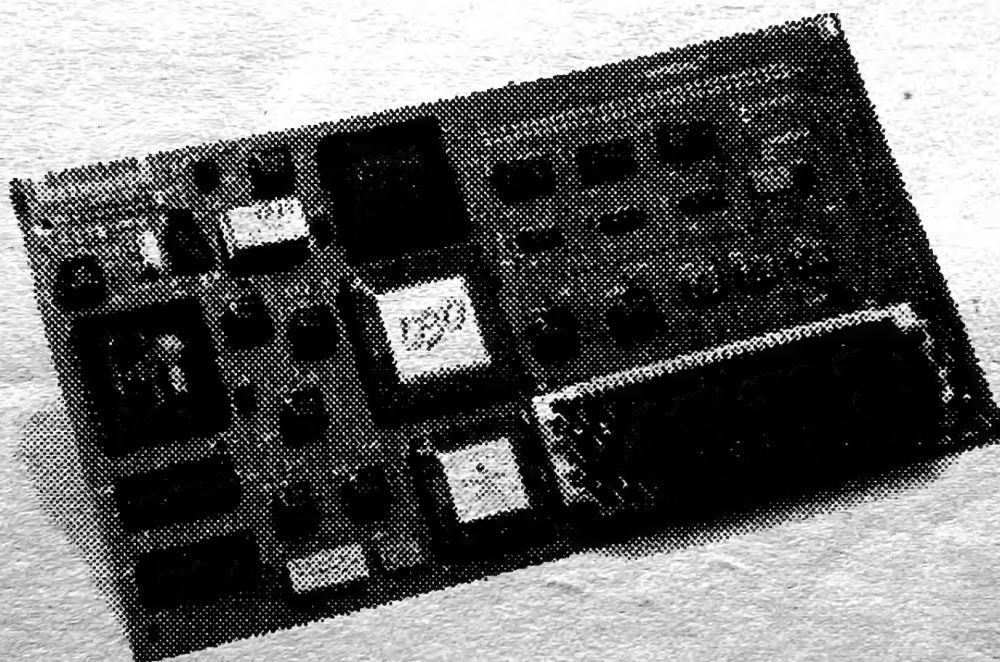


TM

VANDAL

THE BAD BOY OF ACCELERATOR BOARDS



User's Guide

Mac Mall

1800 222 2808

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ExSys SE 1.1a2 (1992)

? Compact Virtual 3.0.

trap 12

Extreme Systems

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cust. privia (206) 575-2334

Introduction



Thank you!

Congratulations on your purchase of the Extreme Systems VANDAL™.

The VANDAL is designed for relatively simple installation into the Macintosh SE. The VANDAL plugs directly into the PDS on the motherboard, and the external monitor port mounts to the chassis of your SE. If you feel uncomfortable opening your SE and installing the VANDAL, Extreme Systems will install the accelerator free. We will also pay return shipping, using whatever method you use to get it to us. For example, if you can only part with your SE for one day, you can ship it to us overnight, and we will get it back to you the next day with the VANDAL and software installed. All you pay for is shipping one way.

The VANDAL features a Motorola 68030 processor and 68882 co-processor, running at 33, 40 or 50MHz, and supports a wide variety of third party monitors. The monitor connector has both a DB9 and a DB15 port, so you can change monitors at your convenience. You can also upgrade to a higher speed by returning the original board and paying the retail difference between your board and the speed you have selected.

Registration Card

Please fill out and return the registration card enclosed with your VANDAL package. If you did not receive one, please let us know immediately. As a registered owner, you will receive information on any updates or changes to the manual or ExSys™ SE software. As an Extreme Systems customer, we want to insure that you are completely satisfied with your purchase. Please let us know if you have any comments about our products, manuals or other services. Your experience and opinion are important to us.

A Brief Overview

This guide covers the installation and operation of the Extreme Systems VANDAL. It also contains information regarding external monitor support and the installation of Compact Virtual™ from Connectix Corporation.

The User's Guide contains a customer support section and a troubleshooting section which may help in identifying any problems that may occur. If you do experience problems with your VANDAL, please consult your guide before calling for technical support. Please have information about your computer and configuration at hand before calling. The list of pertinent details can be found in the troubleshooting section.

In addition to the troubleshooting section, there is a glossary of terms and acronyms at the back of the guide which may help you if you are unfamiliar with accelerators and how they function.

Unpacking

As you unpack your new VANDAL accelerator, please take time to check that you have received all of the items listed on the enclosed packing list. The packing list indicates all the materials necessary to upgrade your SE with a VANDAL. We ask that you save the original packing materials and box which your accelerator was shipped in. You'll use the foam which your VANDAL was packed in to protect your SE screen during installation, but remember to replace it in the box when you're through using it. The original packing materials provide the best protection for your VANDAL should the need arise to store or ship it again. If you are missing any items shown on the packing list, or if you have any other questions regarding your VANDAL upgrade, please call our technical support staff at 206-575-4223.



*Save your
packing
materials!*

Section 1: Hardware Installation

VANDAL Installation

Before you Begin

Installing your VANDAL accelerator in your SE can be accomplished by following the steps in this section. Other sections will deal with other aspects of installation, including external monitors and software. As you go through the guide, please read each numbered paragraph in it's entirety before actually completing the instructions. You may find that questions you have about the step you're working on will be answered by reading through the whole instructional paragraph.

There should be no other peripherals installed in your SE's PDS. If there is something else installed, contact Extreme Systems. If you plan to add an external monitor, first make sure the SE bus access port at the back of your computer is free.

You should be running Macintosh System 6.0.7 or greater. If you are unsure which System you are currently using, check it before continuing. If you need to upgrade your System, make sure that the applications you are running will be fully compatible with the new System before continuing. Finally, make sure that you have the correct quantity and speed of SIMMs for both the VANDAL and the SE's motherboard. If you are unsure of the proper RAM configurations, please consult the table in Appendix D: "Dip Switch Configurations". If you still have questions, contact Extreme Systems before proceeding.



*Do you have
all of your
SIMMs
ready?*

Finally, a word of advice about installing the VANDAL. You should install the VANDAL into the current system as you have it running now, unless you have old System software as described above. Install one piece at a time.

Make sure that the VANDAL and software work before starting in on the Video. Make sure that the VANDAL and Video work before installing Compact Virtual™. And make sure that everything works before changing Systems. In other words, only change one variable in your system at a time. This will help you in using the Troubleshooting guide at the back of the book. It will also assist Extreme Systems in helping you should you need to call for technical support.

The tools you will need before you begin are:

- a flat, non-conductive work area
- a small flat blade screw driver
- a firm sponge pad (use your packing materials)
- a long handled Torx screwdriver*
- a case spreader*
- a CRT discharging tool, or two long shaft flat blade screw drivers
- an anti-static wrist strap*

*These items are included free with your purchase. If you requested but did not receive them, please call Extreme Systems.

If you are installing a third party external monitor, turn to Section 4: "External Monitor Port Configuration" before going any further. That section contains information and instructions you'll need to follow before returning here to install the VANDAL.



Monitor
information
is found in
Section 4

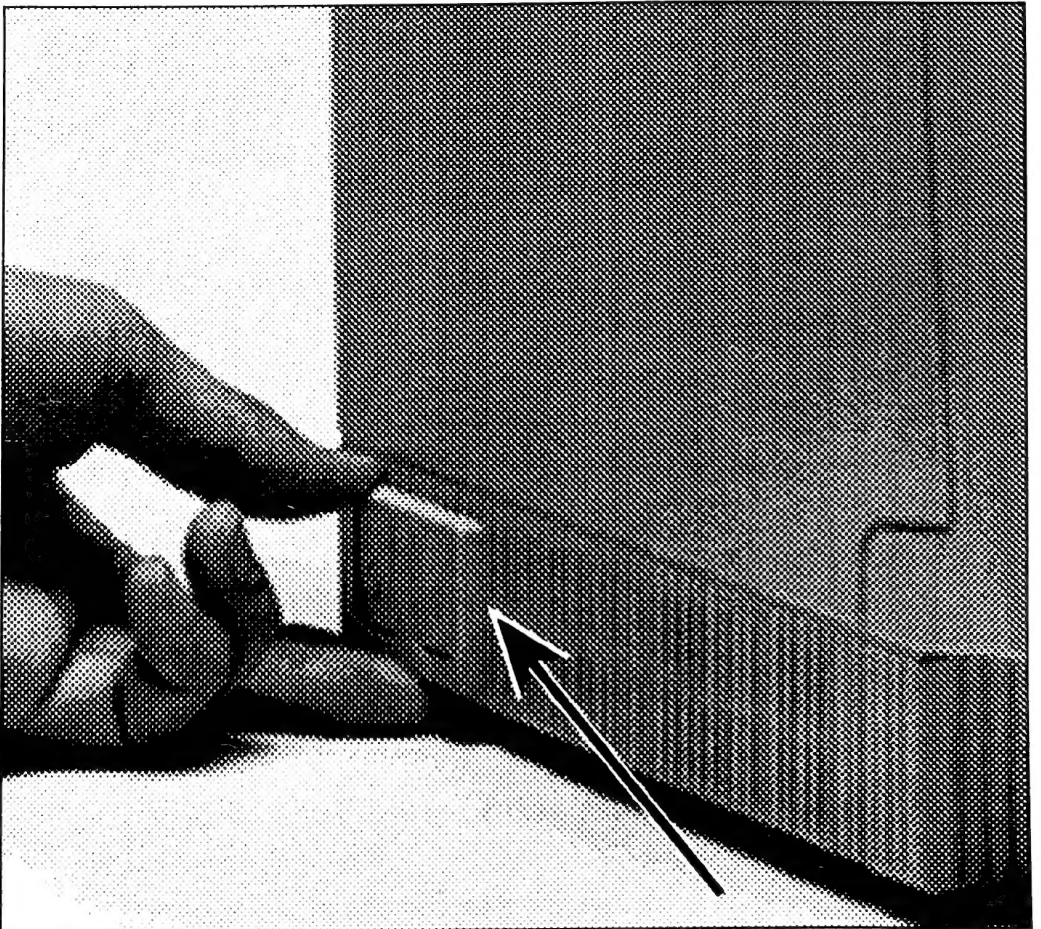
Section 1

*Caution!*

CAUTION: STATIC ELECTRICITY MAY HAVE COLLECTED ON THE SE'S SCREEN. NEVER TOUCH THE SCREEN WHILE TOUCHING YOUR STATIC SENSITIVE VANDAL ACCELERATOR OR SE CIRCUITRY.

To install the **VANDAL** into your SE:

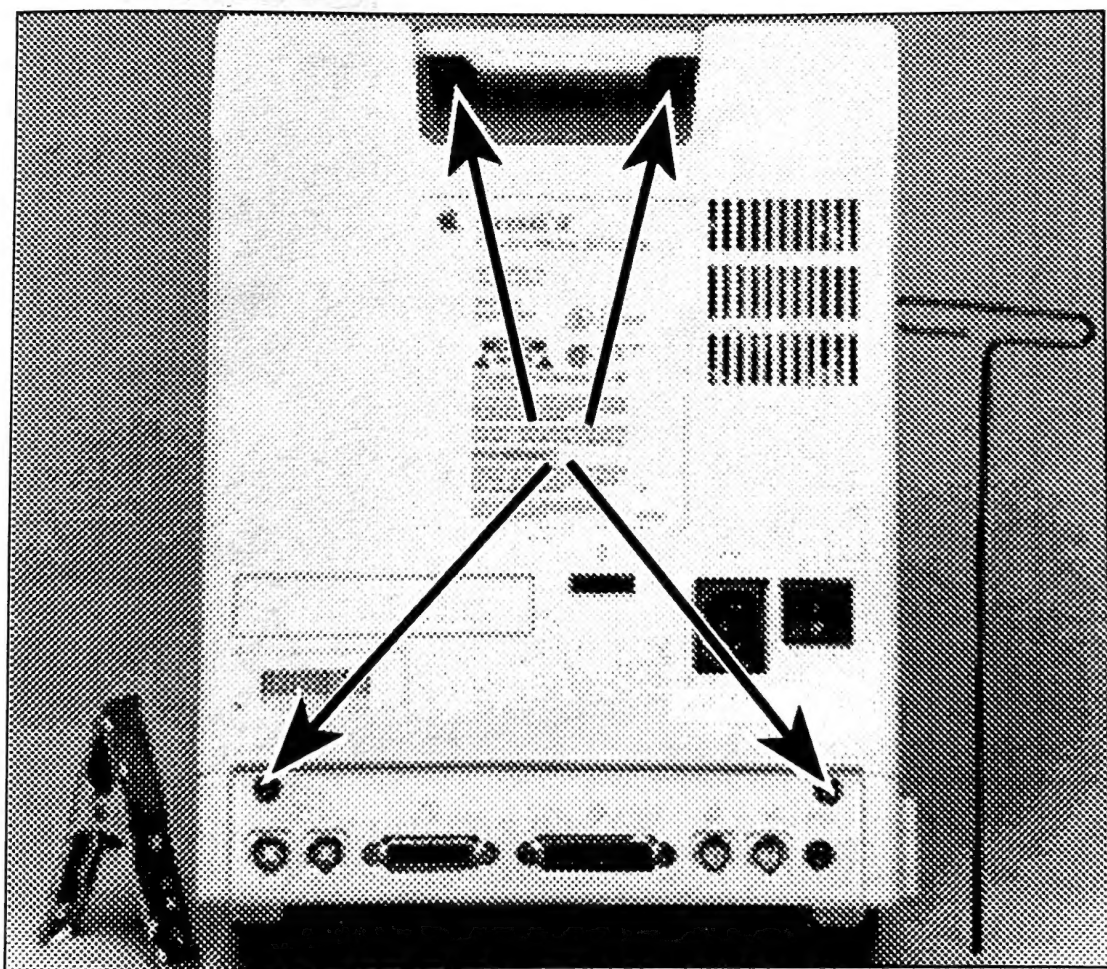
1. Turn off the power to your SE. Disconnect the power cord and remove it from the work area.
2. Disconnect the keyboard, mouse and any other peripheral cables. Remove these items from the work area.
3. Locate the programmer's switch. If it's installed, it will be on the left side of your SE.



The programmers switch

If the switch is installed, you'll need to remove it before proceeding. Take note of its position and orientation before removing it. To remove the switch, gently pry it by pulling at its base. To reinstall the switch, simply align the prongs on the switch with the slots on the SE case and press the switch in until it snaps into place. For now, though, set the switch aside before continuing with the installation.

4. Gently place your SE screen side down, with the sponge pad from your packing materials beneath the screen. Now remove the four case screws using the Torx screwdriver.

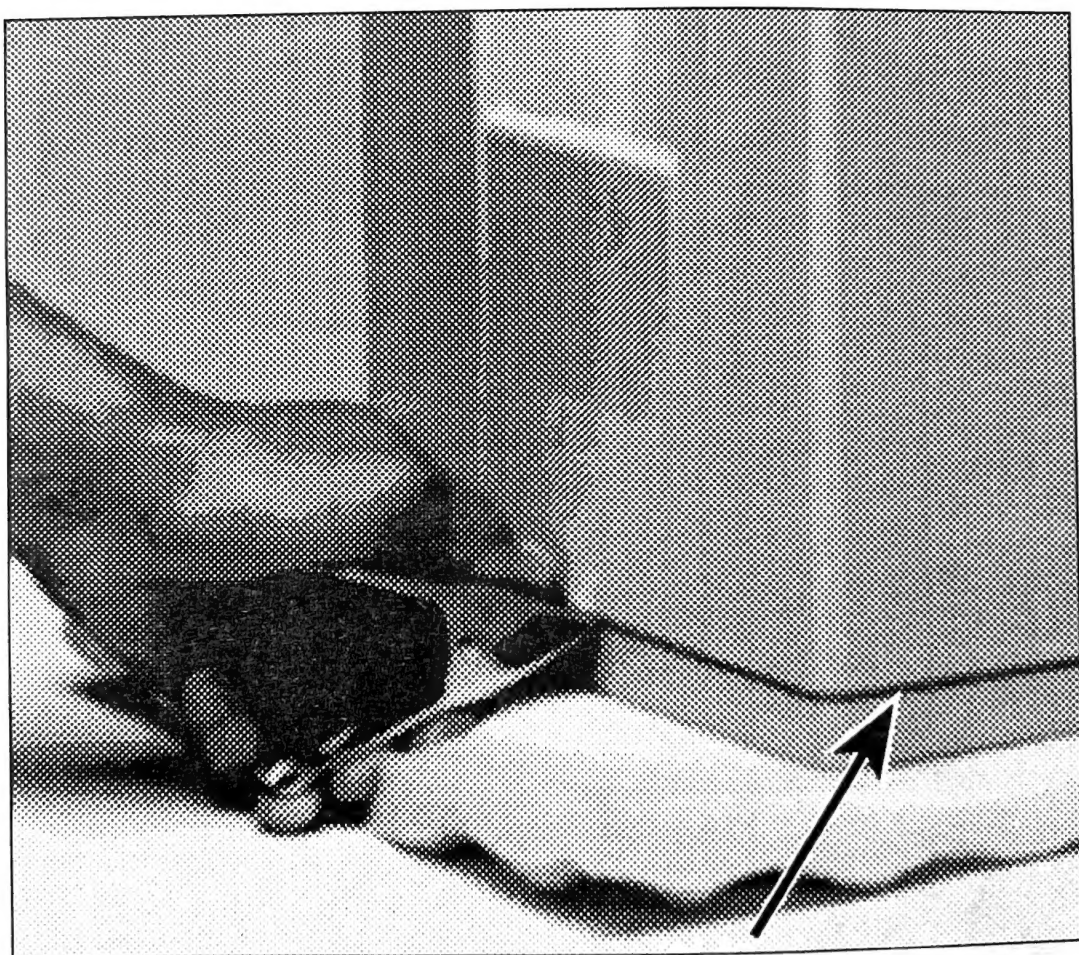


The four screws you'll remove

Section 1

The case screws are located in the top case handle and at the base of the back of the case, near the external ports. Take note of the color and relative location of the screws. The silver screws belong at the top of the SE in the case handle, while the black screws secure the case at the base.

5. With the screws removed, you'll use the case spreader to remove the case. Place the nose of the case spreader in the SE case seal and gently open a 1/8" gap.



The gap should be opened uniformly

Continue opening the gap by moving uniformly along the seal. Spread the case slowly to avoid gouging the seal. Eventually the case will loosen. Some gentle rocking of the case may be required.

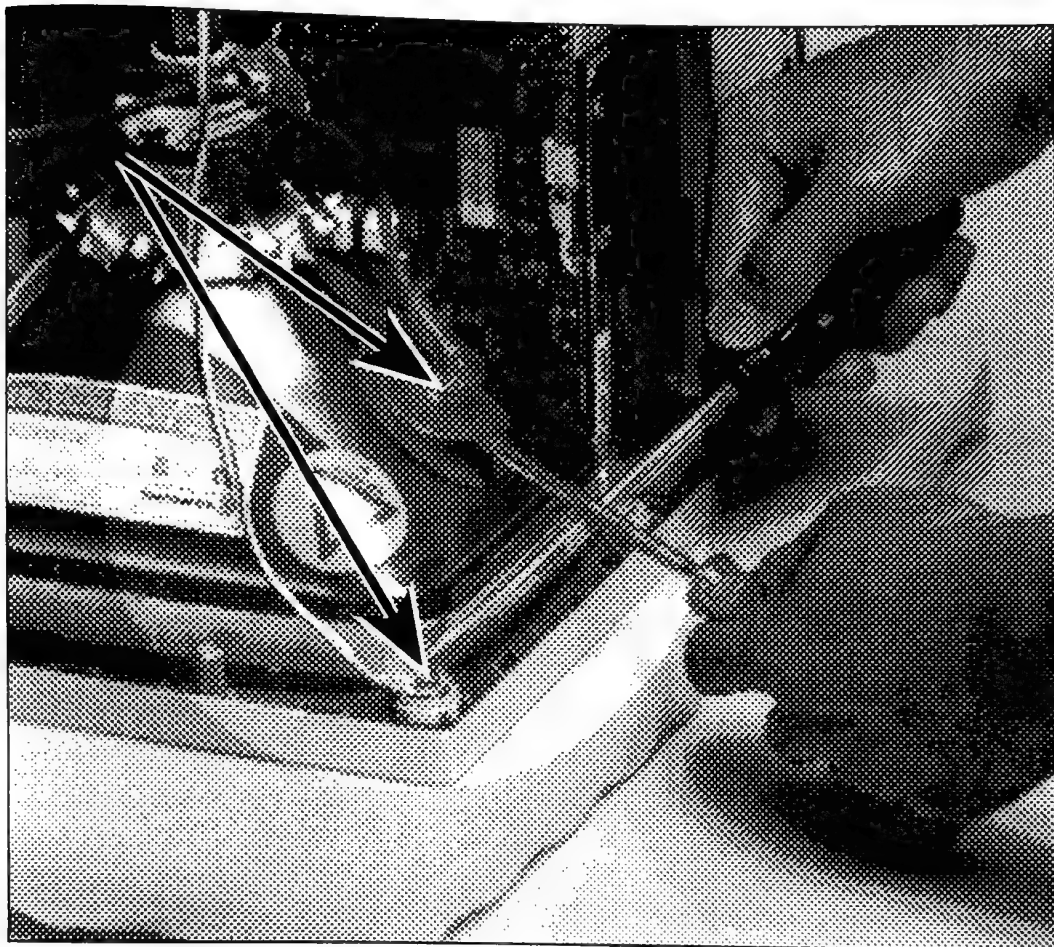
-



Place the tip of one screwdriver here

CAUTION: DO NOT TOUCH THE SHAFT OF THE
SCREWDRIVER.

- 7b. Using the second screwdriver with your free hand, slide the tip under the rubber cover of the CRT anode, and make contact with the anode.

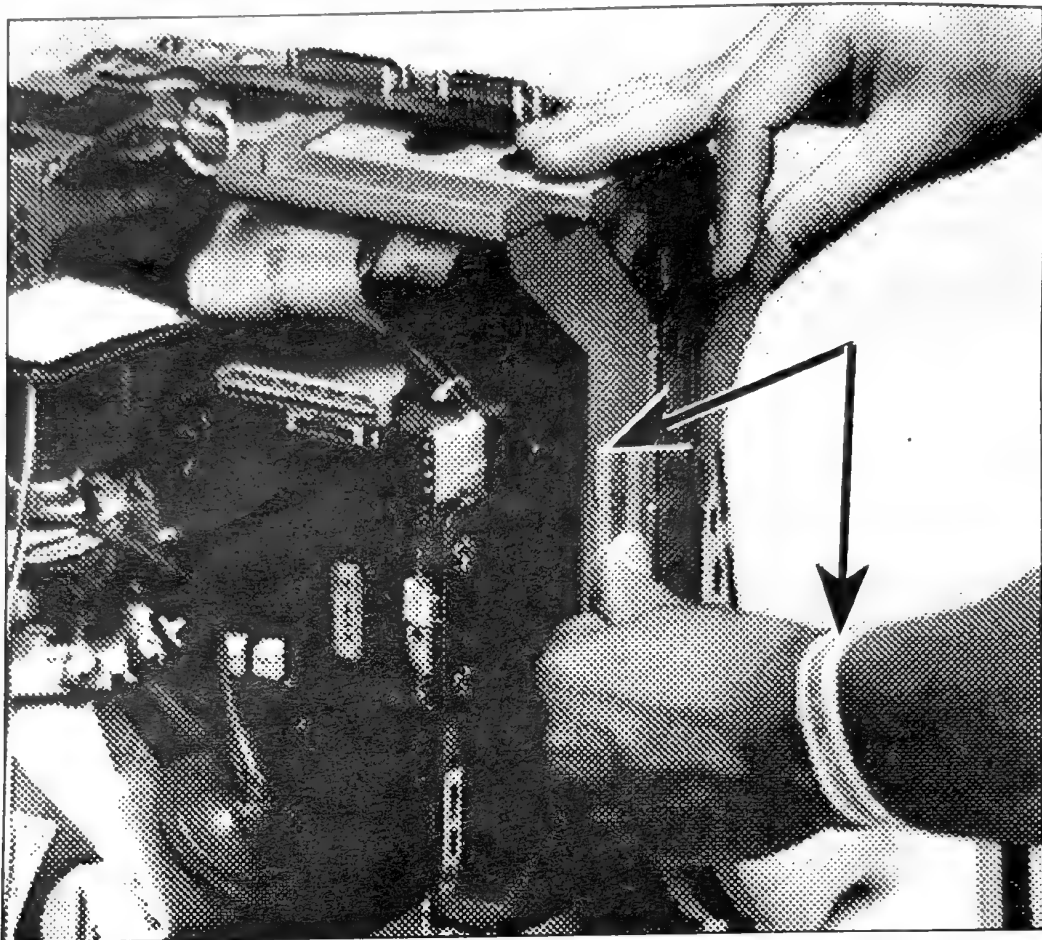


Proper placement of the two screwdrivers

- 7c. Now carefully pivot the second screwdriver until the two screwdriver shafts make contact. You may see or hear a spark as the CRT discharges.

Section 1

8. Now put on the wrist strap provided with your VANDAL upgrade. Attach the copper strip to the metal chassis of your SE.



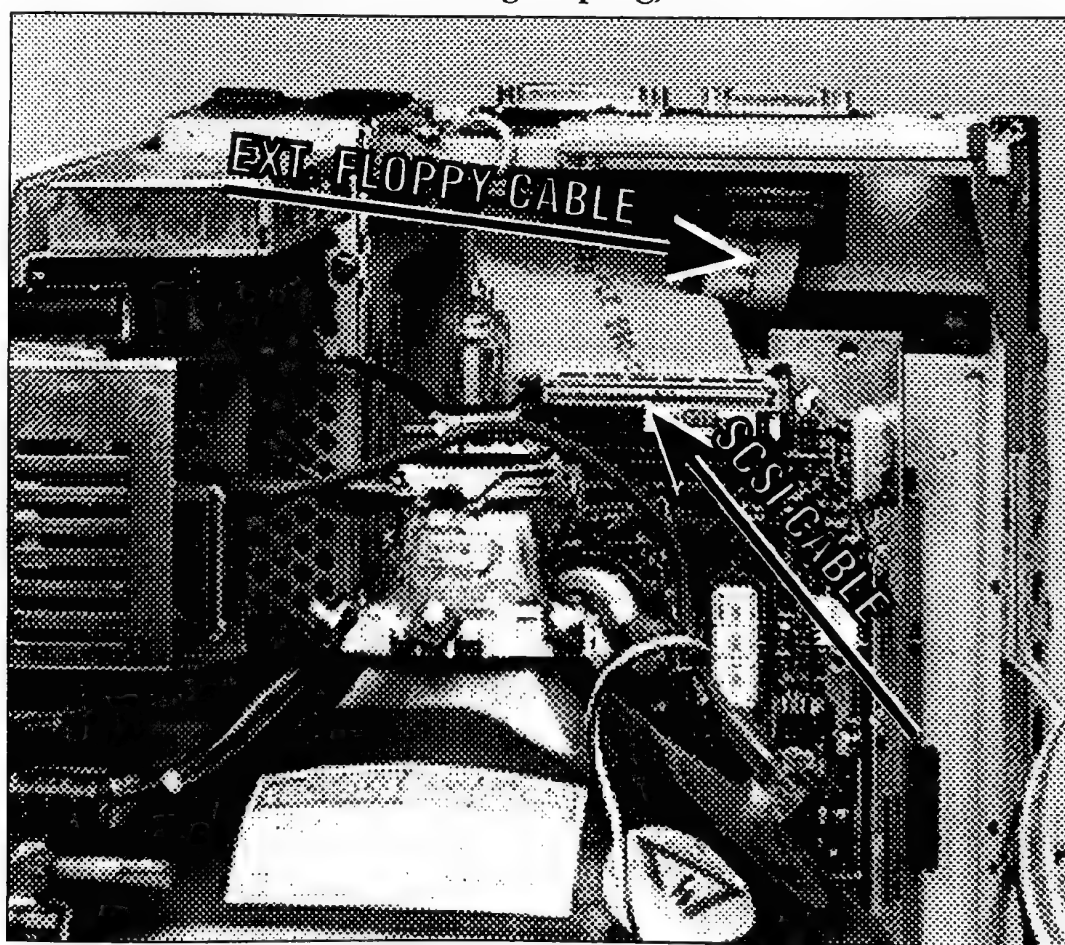
Attaching the grounding strap to the SE's chassis

This will ground you and prevent potential electrical discharge damage to your SE logic board or to the VANDAL accelerator. Now carefully remove the RFI shroud and place it in the case, which was set aside earlier, positioning it so that it assumes the same position relative to the case as it has when the SE is intact. This will help to prevent any damage to the foil.

9. Locate the CRT driver card located on the end of the CRT. It has a plastic cover on its back, or the side facing upward. WITHOUT removing any of the wires that are attached to the CRT driver card, pull the card itself off and away from the CRT. This step helps to prevent damage to the

CRT when removing the SE motherboard. Please note that the card has an orientation key and must be aligned properly when re-attached later.

10. Before removing the SE motherboard, you'll need to disconnect the cables attached to it. Before proceeding, take note of the orientation and Pin 1 of each cable, which is indicated by markings on the cable, a white dot, or a "1" on the motherboard itself. You will need to know the orientation of these cables to prevent the possibility of reconnecting them backwards. Depending on your SE's configuration, the cables you'll need to remove may include: Upper internal floppy drive (20 pin ribbon cable), lower internal floppy drive (20 pin ribbon cable), internal SCSI (50 pin ribbon cable), speaker cable (twisted pair of wires), power cable (multi-wired, multi-colored grouping).

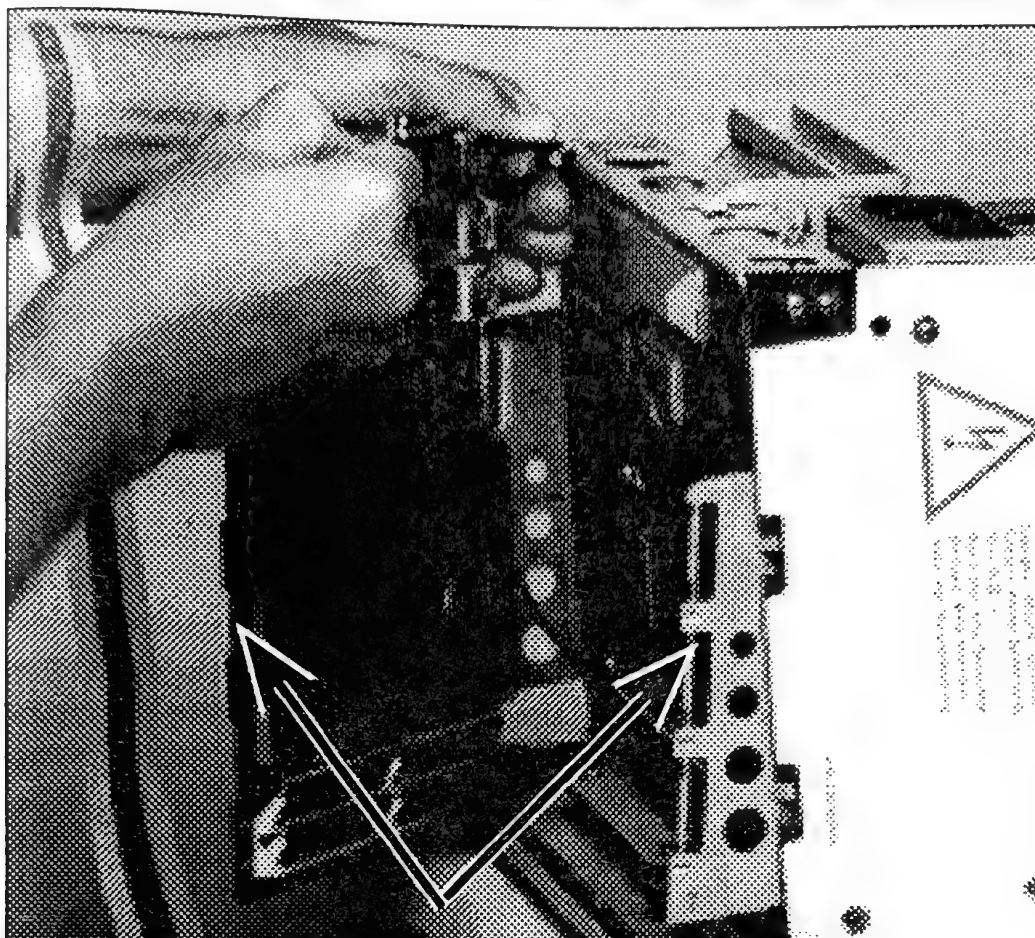


Two of the cables you'll disconnect

Begin the cable removal by removing the power cord first. Locate it's connection to the motherboard. There is a finger gap access to a latch that keeps the cable in place. Open the latch and gently pull the cable away from the motherboard. Some gentle rocking of the connector may be required to remove it. Take care not to pull to hard as you may accidentally jar the CRT. Next, remove the ribbon cables. To prevent the ribbon cable from breaking loose from it's header, follow the next two steps carefully. 1) Locate the connections to the motherboard and gently pull on each cable until the header is exposed. 2) Remove each cable by pulling up on the header. Again, take care not to pull to hard as you may accidentally jar the CRT.

The sound cable may be removed by simply pulling up gently on it's header. It is located to the left of the power cable connector. It may be easier to remove after the motherboard is free of the SE's chassis.

11. Before removing the motherboard from the chassis, note it's position relative to the guides which hold it in place. They are located at the left and right edges of the case. The motherboard is locked into place by two hooks located near the bottom back case screw holes. Disengage the hooks and slide the motherboard out until the left side tabs of the motherboard line up with the gaps in the left guide. Now you will be able to swing the motherboard out from the guides. Carefully place the motherboard on a flat non-conductive clean surface with the components on top.



The motherboard tabs and right edge case guide

NOTE: This is the time to complete any work necessary to re-configure the SIMMs on your motherboard. This may involve removing existing SIMMs and replacing them with others, reconnecting a resistor which was cut to allow the use of 4 megabytes on the motherboard, or removing a “jumper” which was installed for that purpose. Refer to your SE’s User’s Guide for further information on motherboard SIMM configuration.

All SIMM sockets, both on the motherboard and on the VANDAL, must be filled. If you have questions about memory configurations which have not yet been addressed in the process of ordering and installing the VANDAL, call Extreme Systems Technical Support now.

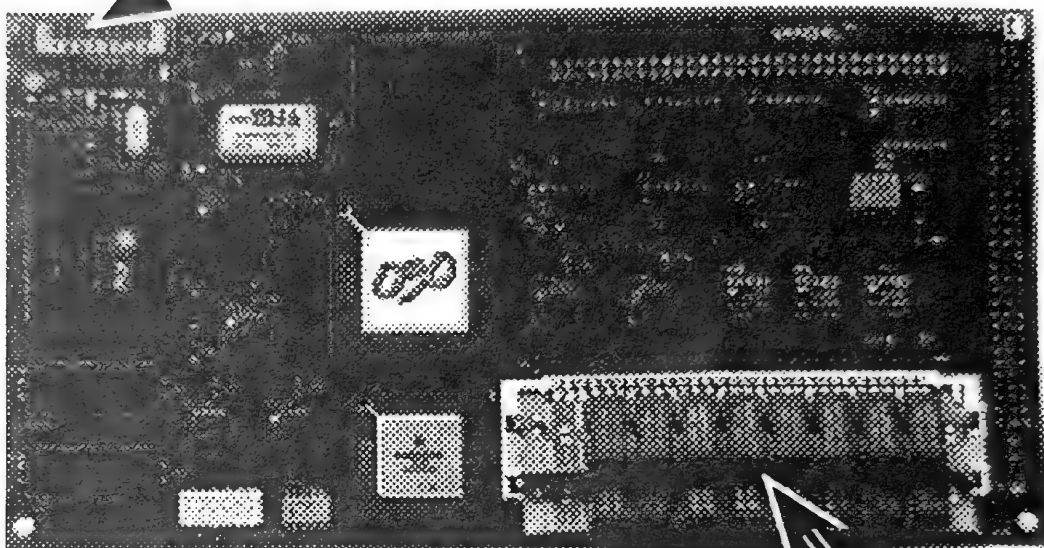


Do you have
all of your
SIMMs
ready?

Section 1

Now the part you've been anticipating. Next you'll remove the VANDAL from its anti-static bag and install it onto the motherboard. Before proceeding, however, please read through paragraphs 12, 13 and 14 before completing the instructions step by step

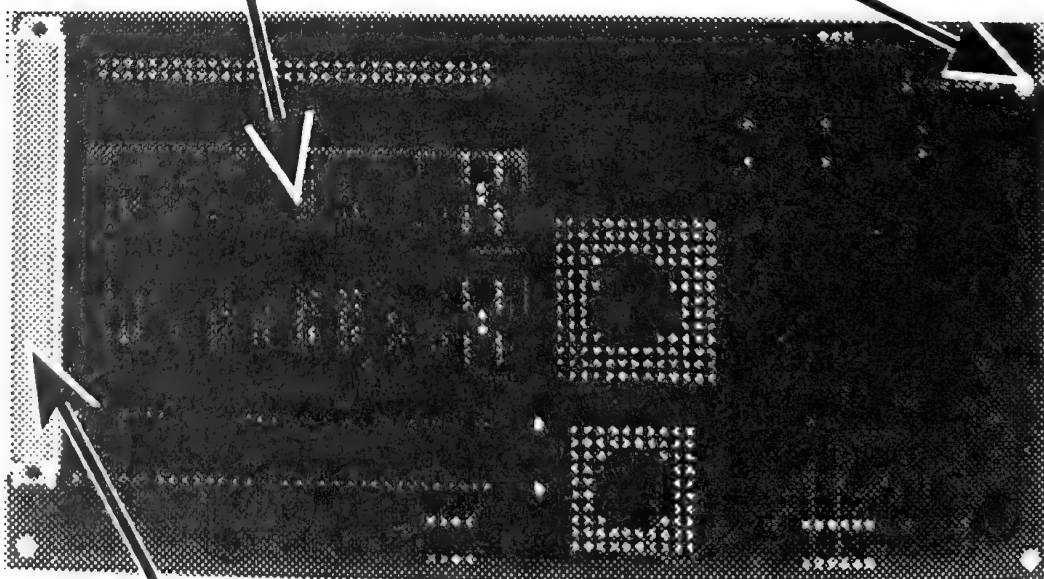
The video cable will install here



Two SIMMs will install here

Two SIMMs will install here

One spacer will install here



This connector will plug into the PDS

12. Carefully remove your VANDAL accelerator from its anti-static bag, holding it by the board edges only. Before setting it down, turn the board over and install two of your four SIMMs into the slots on the bottom side of the VANDAL. Now gently place it down on a clean, flat, non-conductive surface with the components on top. Install your last two SIMMs by gently snapping them into place in the two slots on top of the VANDAL. If you are not planning to install an external monitor at this time you may skip instructions 13 and 17. Do not re-configure the DIP switches on the VANDAL. If you have questions about their settings or use, please call Extreme Systems Technical Support.

13. Included with your VANDAL upgrade is an external monitor port and a flat ribbon cable. The cable connects the VANDAL to the monitor port, or I/O Board. At this point, you should have read Section 4: "External Monitor Port Configuration", and determined which connectors on the external monitor port will be used. Don't connect the flat ribbon cable to the external port yet. It will be easier to re-install your motherboard with this cable loose on the monitor port end.

As referred to above, attach the cable to the VANDAL accelerator only. First, locate the "video out" port on the VANDAL.

Now match Pin 1 on either end of the flat ribbon cable to the correct position on the "video out" port on the VANDAL. Press the connector into place.

14. The VANDAL accelerator is designed to install into the 96 pin PDS located on the right edge of the motherboard (as you face it when installed). Before installing the VANDAL, inspect the motherboard for dust, especially on the PDS

Section 1

and inside the pin connectors. Gently clean the PDS with a soft cloth or soft brush, making sure that it is free of dust before installing the VANDAL. Now orient the accelerator with the component side up so that the PDS connector on the bottom side of the VANDAL can connect to the motherboard PDS. CAUTION: DO NOT install the VANDAL yet. When you have the proper orientation and location of the VANDAL relative to the motherboard, find the small hole at the upper left corner of the VANDAL, and the location of the corresponding hole on the motherboard.

Snap the longer double-headed spacer into the hole described above on the motherboard. Locate a second hole, closer to the front edge of the motherboard, in Row F (Row letters are marked on the motherboard). Snap the shorter single-headed spacer into this hole on the motherboard.



Caution!

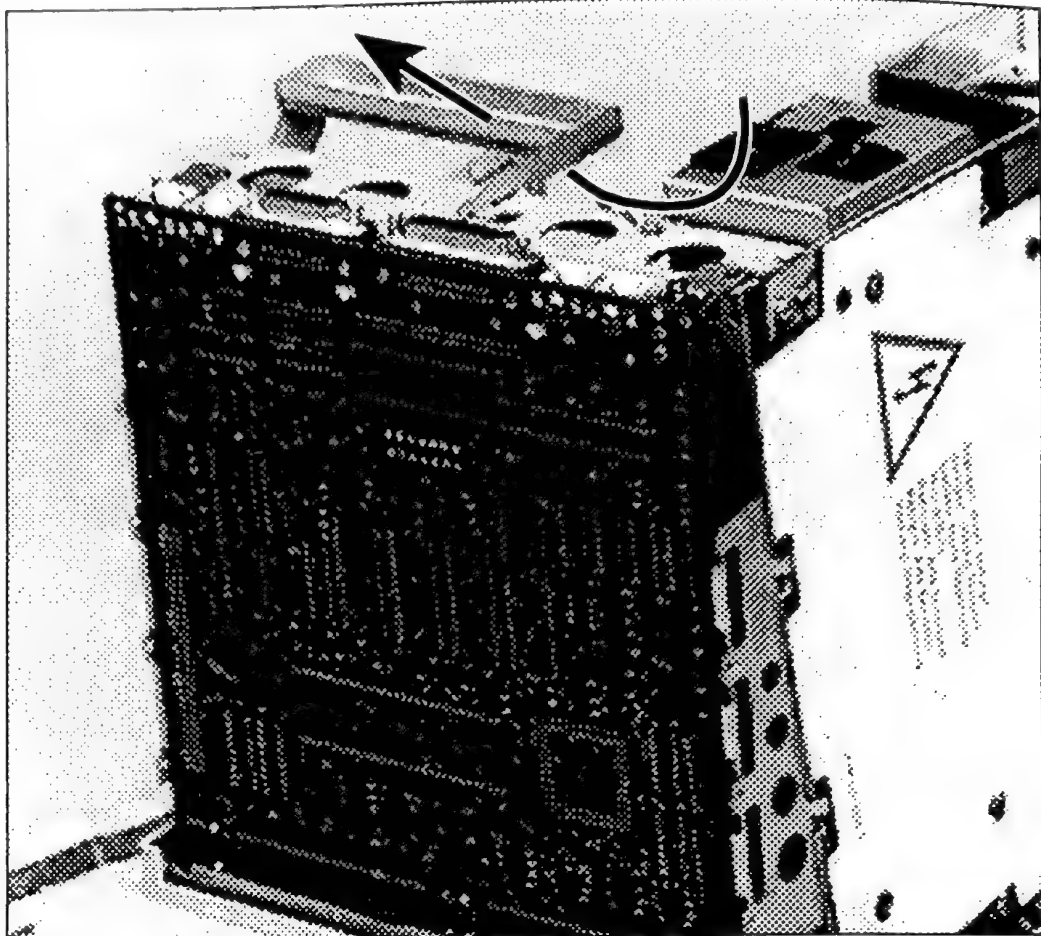
It is EXTREMELY important that these spacers be in place before installing the VANDAL. The spacers prevent the possibility of damaging the VANDAL, which may occur if improper contact is made between the VANDAL and the SE's chassis.

To install the VANDAL, squeeze the PDS connector on the VANDAL together with the connector on the motherboard until they have mated properly. Snap the longer double-headed spacer into the corresponding hole which you located earlier on the VANDAL. The VANDAL should rest on top of the second spacer nearer to the front of the motherboard. No snapping or firm connection is necessary here. Take care to insure that the video flat ribbon cable is free and clear and not trapped between the VANDAL and the motherboard.

Next you'll put the motherboard with the accelerator back into it's original position. Read through paragraphs 15 and 16 completely before following the instructions step by step.

15. The first step in reinstalling the motherboard is to connect the sound cable after positioning the motherboard near the chassis guides. Now align the free end of the cable with its port on the motherboard, then push down to re-connect the cable. Next, reinstall the motherboard by fitting it's straight right edge into the corresponding guide on the right hand side of the chassis, and aligning the tabs on the left edge of the motherboard with the gaps in the guide on the left hand side of the chassis. If you have installed the video cable as described in paragraph 13, feed it through the largest rectangular opening, nearest to the back side, in the underside of the chassis. This will prevent the cable from becoming trapped between the motherboard and the chassis. Press and slide the motherboard into it's original position. Make sure that the two hooks near the screw holes lock into their original position.
16. Now re-connect the other cables to the motherboard. Start with the ribbon cables. Simply orient them in their original positions, which you took note of before disconnecting them, and gently press them into place. You may need to press the opposite side of the connector on the bottom side of the motherboard, then squeeze the header into position. Finally, reconnect the power cable in the same way until it locks into position.
17. Next, you will attach the external monitor port provided with your VANDAL to the SE bus access expansion port at the back of the SE's chassis.

Section 1

***Install the video I/O board from the inside***

Use the included screws, lock washers and nuts to install the port. Locate the SE bus access expansion port on the back of the chassis, then putting the external monitor port through from the inside of the chassis, align the screw holes on the External Monitor port provided with the bus expansion slot. The lock washers and nuts should be on the inside of the chassis, with the screw heads on the outside. The DB9 and DB15 connectors will be recessed so that the plastic bus expansion port cover will fit over the port if necessary.

Connect the video flat ribbon cable from the VANDAL to the proper connector on the external monitor port. If you have any questions about which port you should be using, refer to Section 4: "External Monitor Port Configuration".

18. Reconnect the CRT driver card to the CRT by aligning the holes on the driver card to the pins on the CRT. The pins and holes are in a circular pattern and can only connect in one orientation.

Congratulations! The hardware installation is complete.

NOW THAT THE VANDAL INSTALLATION IS COMPLETE, YOU SHOULD TEST IT BY FOLLOWING THE STEPS BELOW BEFORE CLOSING UP THE SE COMPLETELY.

Testing the Installation

- CAREFULLY lift the SE by the chassis and place it upright on the work surface. Plug the AC power cord into the back of the SE and turn the computer on. The SE should immediately start up with it's distinctive "beep" sound.

NO BEEP!

If you failed to get a beep sound, turn off the power immediately. Recheck the cables and power cords to insure proper connections. Try turning the power on again. If the problem persists, turn the computer off and refer to the troubleshooting guide before doing anything else.



Arrgh!

IT BEEPS!

Turn the power off and remove the AC power cord from the back of the SE.

The rest of this section deals with putting your SE back together properly.



Yeah!

- 20. Lift the SE gently by the chassis, place it face down on the sponge pad once again.**

21. Remove the adhesive backed copper portion of the wrist strap from the SE chassis. Be sure not to touch any of the components inside the case once the wrist strap has been removed. It is a good idea to save your wrist strap in case you need to open up your SE again. Retrieve the case and RFI shroud.
22. If you have installed the external monitor port as described earlier, you'll need to remove the bus access port cover before reconnecting the case and chassis. Push the cover out from inside the case.. You may want to store the cover with your VANDAL packing materials. Now fit the case back onto the chassis in it's original position. Take special care to insure that the RFI shroud does not fall out of place when placing the case back into position. Also, make sure that none of the cables are caught in the chassis or strained when the cover is re-installed. Align the screw holes, then replace the silver screws at the top of the case and the black screws at the base.
23. Reinstall the reset switch on the left side of your SE.
24. Reconnect the keyboard, mouse and any other peripheral devices and the power cord. The hardware installation is now complete.



NOTE!

NOTE: The performance of your upgraded SE will increase immediately to half the clock speed of the new CPU on the VANDAL. However, the full performance and features of the VANDAL will not be evident until the software is properly installed. If you are connecting an external monitor to your VANDAL, you'll need to install software to utilize that portion of your upgrade as well. You'll complete the software installation in the next section.

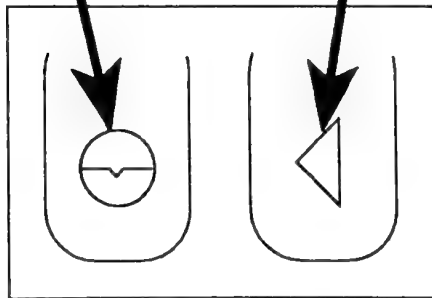
Disabling the VANDAL

If necessary, the VANDAL can be disabled using the programmer and reset switches on the lower left side of the SE.

To disable the VANDAL follow these steps. 1) Press and continue to hold the programmers switch. This is the switch farthest from you. 2) Still holding down the programmers key, press and release the reset switch, the one closest to you. At this point you should hear the familiar "beep" sound. 3) No release the programmers key. 4) The System will restart but the VANDAL will be disabled. The SE will function now as it originally did without the VANDAL installed. This condition will continue until a normal restart is performed.

Interrupt Switch

Reset Switch



Re-starting in "68000" mode

Press and hold the Interrupt switch (back), then press and release the Reset Switch. Now release the Interrupt Switch. The computer restarts with the 68000 processor in control.

Disabling the VANDAL can be a helpful troubleshooting feature. Certain applications are processor dependent or RAM intensive, and may only operate in only one mode.

If the VANDAL has been disabled, the Extreme Systems software, when installed, will behave as follows:

ExSys™ SE:

As the SE System reboots in "68000" mode, the INIT icon will appear with an "X" through it.

If you are using System 7.0 or greater and have only 1 megabyte of memory installed on the motherboard a dialog box stating that "System 7 needs more memory."

ExSys™ SE Video:

As the SE System reboots in "68000" mode, the INIT icon will appear without an "X" through it. The software will attempt to reload regardless of the state of the VANDAL. Hold the mouse key down while re-booting in order to disable the Video software.

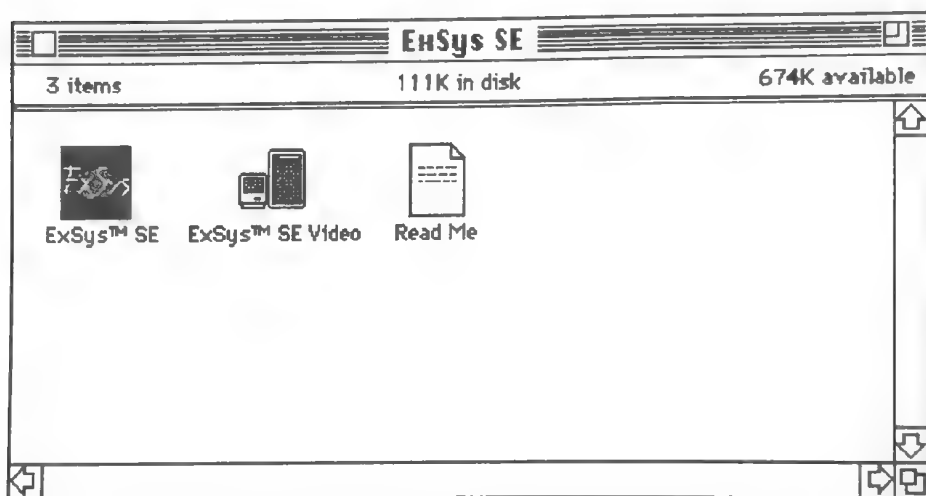
Compact Virtual™:

Compact Virtual must have the VANDAL enabled in order to function. An error message will be displayed if the System is restarted with the VANDAL disabled.

sequence by third party software. After you have successfully installed the ExSys™ SE software and tested your VANDAL to insure that it works properly, you may replace the Control Panels, Extensions and Virus protection software.

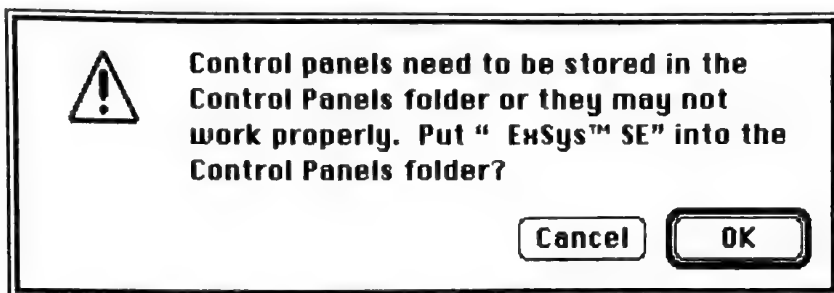
Installing the Extreme Systems Software

1. Turn on your SE's power. When the Macintosh Desktop appears, insert the ExSys™ SE disk into the floppy disk drive. The ExSys™ SE window should open automatically. If it does not, double click on the disk's icon.



The ExSys™ SE disk desktop

2. Open the "Read Me" file on the disk. Here you'll find any updates to the manual, tips, or other useful information.
3. After you've finished with the "Read Me" file, quit the application to return to the ExSys™ SE disk window.
4. Now copy the ExSys™ SE file by dragging it to the System Folder on your SE. If you are using System 7 or greater, you will be presented with a dialog box as shown.



If you're using System 7, you'll see this dialog box

Click "OK" or press "return" on the keyboard to automatically place the Control Panel in the correct folder inside the System Folder. You may also place the software directly into the Control Panels folder.

5. Eject the disk by dragging the disk icon to the trash.
6. Choose "Restart" from the "Special" menu. The ExSys™ SE INIT icon should materialize as the system boots up. The appearance of the icon signals that the software has been installed correctly and that both the software and VANDAL are functional. If the ExSys™ SE init icon appears with an "X" through it, or if the icon does not appear, the software installation has failed. There are several conditions which may cause problems resulting in the icon not showing up or showing up with an "X" through it. You should refer to the troubleshooting section before continuing any further.

If the ExSys™ SE boot icon materializes as it should, you'll then be able to access the ExSys™ software as a Control Panel Device. In both System 6 and System 7, Control Panels can be accessed from the Apple Menu at the top left of your menu bar. In addition to the control panel, there is now an ExSys™ SE preference file in your System. If you are required to de-install the software at any time in the future, you'll need to remove the preference file as part of that procedure. Consult the

Section 2

Troubleshooting section or call Extreme Systems Technical Support if you have questions about removing the software.

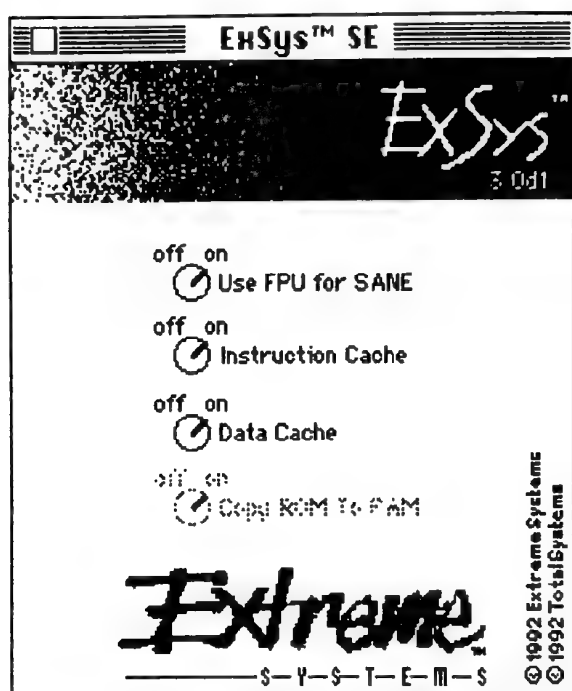


Hoorah!

Your Done! Congratulations. You will see an incredible performance increase in your SE. As mentioned at the beginning of the guide, you should experiment with your new accelerator before continuing with the Video or Compact Virtual™ installation. Try opening and closing some applications, doing a little work in one of them, or perform some type of tests on your own that will confirm to you that everything is working properly. While testing your "VANDALized" SE, check out how your system has been modified. Verify that the VANDAL RAM is being accessed. To do this, select "About this Macintosh" from the Apple menu while you are in the "Finder". You should see a total of 4 megabytes of RAM available. Take note of the order in which the INITs appear as your system boots up. The ExSys™ SE icon should appear first. (The one exception is Compact Virtual, which should load before the ExSys™ SE software). If you have system performance software (other than Snooper™, early versions of which gave erratic results), compare performance measurements to find out which areas of your systems overall performance have been enhanced, and by how much. Extreme Systems Technical Support uses Speedometer™, Mac EKG™, and several math intensive programs to exercise and test the features of the VANDAL. You might want to disable the VANDAL completely (refer to the end of Section 1: "Hardware Installation" and run some tests. Then restart and perform the same tests with the VANDAL fully operational. You will be amazed at the speed increase. Once you are satisfied that your new VANDAL has been installed properly, move on to Section 5: "External Monitor Installation". If you are not installing an external monitor but you are installing Compact Virtual, move on to Section 6: "Using Compact Virtual". If you are installing neither, enjoy your new VANDAL!

Section 3: Software Features

The ExSys™ SE software allows you to configure and utilize the hardware features on the VANDAL accelerator. There are three software controls; Use FPU for Sane; Instruction Cache; and Data Cache. The final feature on the Control Panel is titled "Copy ROM to RAM". This feature is grayed out on the panel itself, but is in use at all times.



The ExSys™ SE Control Panel

There is no switch to activate or disable the accelerator itself. At the end of Section 1: "Hardware Installation" you will find a detailed explanation of the method for disabling the accelerator.

The three selectable items can be changed by clicking on the small switches pictured on the Control Panel.

About “FPU for SANE”, or Quicksane™ Routines

The FPU for SANE switch allows you to enable or disable the use of enhanced SANE (Standard Apple Numeric Environment) routines, or Quicksane™. Quicksane™ is our own set of mathematical software routines which accelerate math applications which don't normally take advantage of the math co-processor. They may be switched off if you suspect that these routines are causing some problems with math calculations. As such, the switch acts primarily as a troubleshooting device. If math speed is desired, leave the switch in the “On” position. If you do decide to turn the Quicksane™ routines off for any reason, it will NOT be necessary to reboot the computer in order for this change to take effect. The routines can be either enabled or disabled on the fly.

Quicksane™ routines are significantly faster than SANE, Apple's own software, but the speed gain comes with the possibility of minutely less accurate calculations. Quicksane™ is accurate to 1 part out of 999,999,999,999,999 parts, while SANE routines are accurate to 1 part out of 9,999,999,999,999,999 parts. In most cases, this minute difference is never considered by software applications. However, as mentioned, this is a good place to begin troubleshooting if you suspect that there may be an inaccuracy in mathematical calculations.

In the “Off” position, Apple's SANE routines are left to handle math calculations. The FPU is utilized only by applications which recognize it and execute FPU instructions.

About “Instruction Cache” and “Data Cache”

Both the Instruction and Data caches are built into the MC68030 processor on your VANDAL accelerator. They are both 256 Bytes. The caches provide fast access for the

CPU to either program code instructions or the resultant data. Both types of information are also stored in RAM, but caching them as the MC68030 does improves overall speed performance by eliminating the need for the CPU to go through a bus cycle to retrieve the information. With the caches turned to the "Off" position, the CPU retrieves the information out of RAM, which is a little slower. As with the "FPU for SANE" described above the "On/Off" switching for the caches occurs "on the fly", taking place as soon as you affect the switch. It is NOT necessary to restart your computer for the changes to take effect. For most operations you will want both of these caches turned to the "On" position.

There are cases in which you might opt to turn the caches off. Applications which are time dependent as well as some games may be affected by cached instructions. Some older programs may also be affected. These programs, written before the advent of CPU caching, have self modifying code which does not expect to find that instructions have been stored by a cache for re-use. As described earlier, these toggle switches are best used as the first step in troubleshooting, and should be left in the "On" position unless you suspect a problem related to one of the conditions described in this paragraph.

About "Copy to ROM to RAM"

As mentioned, this feature is grayed and is permanently locked in the "On" position. The effect of this command is increased speed by copying the information from the SE's motherboard ROM's to RAM on the VANDAL. All Toolbox routines are executed off the VANDAL, rather than being executed off the motherboard with its slower execution speeds.

Section 4: External Monitor Port Configuration



Make sure the external monitor you intend to use is on the list!

This section should be completed before the installation of the VANDAL accelerator. After you complete this section, the proper video connections will have been determined, making the complete hardware installation easier. Once you've completed both this section and Section 1: "Hardware Installation", you'll be able to simply plug in your external monitor, confident that your setup is thorough.

The complete VANDAL Video setup includes the VANDAL Video circuitry itself, an external monitor port, and a 16 position flat ribbon cable to connect the two. Of the four connectors on the external monitor port, only two will be used. The four ports include one DB9, one DB15, and two 16 position cable connectors. In general, Analog monitors will use the DB15 connector, while ECL and TTL monitors will use the DB9. Dual page monitors will use the flat ribbon cable connector labeled ECL/Analog, while full page monitors will use the connector labeled TTL/Analog. Only one flat ribbon connector and one DB connector will be used. Determine the appropriate settings for your monitor from the table below, writing the information down if necessary to be used when completing your hardware setup. When you have determined the appropriate connectors, return to Section 1: "Hardware Installation", and proceed with the installation of your VANDAL.

The following table shows monitors with which the VANDAL is compatible. The table should be used to determine the proper connectors to be used with your monitor.

Flat Ribbon Cable Connector	DB Connector	Video Type	Monitor Description
TTL/ANALOG	DB15	Analog	Apple 2 Page 1152x870
TTL/ANALOG	DB15	Analog	Apple Portrait 640x870
ECL/ANALOG	DB9	ECL	Ehman DPD 1024x768
ECL/ANALOG	DB9	ECL	Gen. Sys. DPD 1024x768
TTL/ANALOG	DB15	Analog	Gen. Sys. FPD 640x870
ECL/ANALOG	DB9	ECL	Lapis DPD 1152x870
ECL/ANALOG	DB9	ECL	Lapis DPD 1024x768
TTL/ANALOG	DB9	TTL	Lapis FPD 640x870
TTL/ANALOG	DB15	Analog	Mirror FPD 640x870
ECL/ANALOG	DB9	ECL	Mirror DPD 1024x768
TTL/ANALOG	DB15	Analog	Radius FPD 640x870
ECL/ANALOG	DB9	ECL	Samsung DPD 1024x768
TTL/ANALOG	DB15	Analog	Sigma Des. DPD 1152x870
TTL/ANALOG	DB15	Analog	Sigma Des. FPD 640x870
TTL/ANALOG	DB9	TTL	Triam TTL FPD 640x870
TTL/ANALOG	DB15	Analog	Triam Analog FPD 640x870

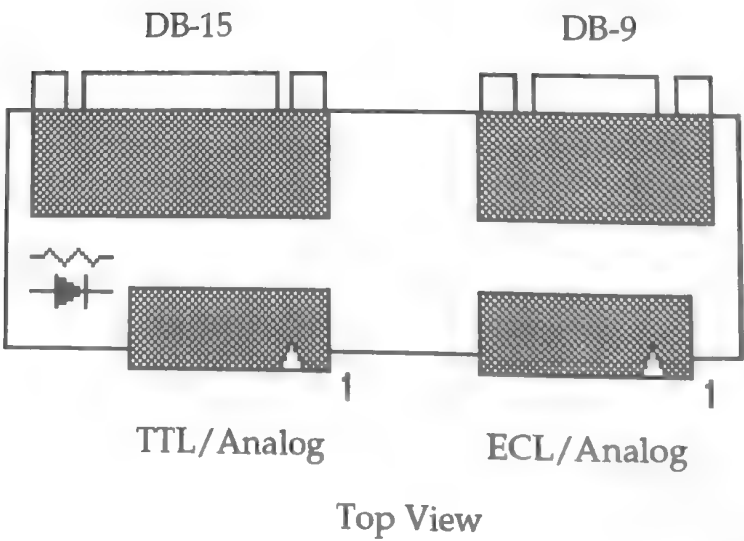
There are a few exceptions to the table above. We have "monitor specific" configurations of the I/O board or cable which have been developed to address the specifications of certain monitors. One example is the Radius FPD model# 15RAM3. This particular monitor requires a special cable which you should have received if that is the monitor you intend to use. The other example is the Radius TPD19, which requires a special external video port. Again, if you intend to use this monitor, you should have received the necessary custom hardware with your order.

If you intend to use a monitor not listed in the table or the paragraph above, you may attempt to identify the proper settings for the monitor with information from the following subsection. If you are unsure how to use the table or are unsure if your monitor is compatible, please call Extreme Systems Technical Support before going any further.

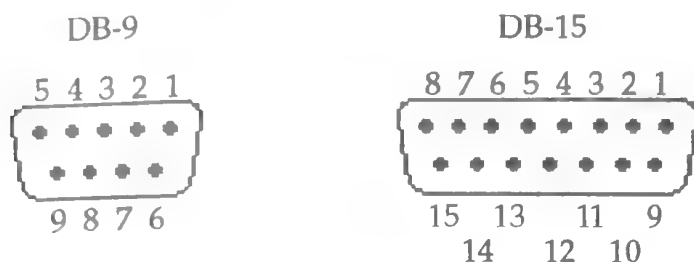
To attempt to hook up a monitor not listed above follow these steps:

1. Gather technical information about the monitor from the manual or the manufacturer. This information should include monitor type (FPD or DPD), video type (Analog, TTL, ECL, Composite), display resolution, connector type (DB9 or DB15) and the pinouts.
2. Match the data with the table below:

Flat Ribbon Cable Connector	DB Connector	Video Type	Monitor
ECL/ANALOG	DB9	ECL	DPD-1 1152x870
ECL/ANALOG	DB9	ECL	DPD-2 1024x768
ECL/ANALOG	DB9	ECL	DPD-3 1024x768
TTL/ANALOG	DB15	Analog	DPD Analog 1152x870
TTL/ANALOG	DB9	TTL	FPD-1
TTL/ANALOG	DB15	Analog	FPD-Analog 640x870



Match the monitor pinouts with the figures shown



Front View

If TTL/Analog connector used:

DB-9:

- 1 - Ground
- 2 - Ground
- 3 - Ground
- 4 - Ground
- 5 - Ground
- 6 - TTL video
- 7 - TTL video
- 8 - Horizontal Synch
- 9 - Vertical Synch

The DB-15 pinout is the same for either connector used:

- 1 - Ground
- 2 - no connect
- 3 - no connect
- 4 - Ground
- 5 - Analog video
- 6 - Ground
- 7 - no connect
- 8 - no connect
- 9 - no connect
- 10 - Ground
- 11 - no connect
- 12 - Vertical Synch
- 13 - Ground
- 14 - no connect
- 15 - Horizontal Synch

If ECL/Analog connector used:

DB-9:

- 1 - ECL+ video
- 2 - Ground
- 3 - Horizontal Synch
- 4 - Vertical Synch
- 5 - Ground
- 6 - ECL- video
- 7 - Ground
- 8 - Ground
- 9 - Ground

Figure 21 - DB Connector Pinouts

WARNING: NO STANDARD PINOUT HAS BEEN ESTABLISHED AMONG THIRD PARTY MONITORS, AND THE EXTERNAL MONITOR MAY NOT BE COMPATIBLE WITH THE VANDAL ACCELERATOR, EVEN IF ALL OF THE CONNECTORS MATCH.



Attention!

As a reminder, if you are unsure about monitor configurations or specifications, please call and ask Extreme Systems to help you.

Section 5: External Monitor and Monitor Software Installation

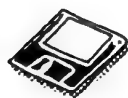
The VANDAL accelerator has on board video hardware for external monitor support which automatically configures itself as the system boots up. Once you set up the video software and re-boot, your system will appear as it was configured every time you boot up. Both the video software installation and the software features are covered in this section. Do not connect the external monitor until instructed by the step by step installation guide.

Video Software Installation

You should have installed the ExSys™ SE software and confirmed that the accelerator is working properly before installing the SE Video software. If that step has not been completed, refer back to Section 2: "Extreme Systems Software Installation" before continuing with this section.

Before you begin

After following the instructions in Section 4, you should have a backup disk containing all of the software that came with your VANDAL package. Use this disk to install the Video Software.



*More
software!*

Installing the Video Software

1. Turn on the power for your SE. After the Mac desktop appears, insert the disk. The disk's window should appear as before. If it does not, double click the disk icon to open it.
2. Examine the "Read Me" file before installing the Video Software. Then close the file and the

application program used to open it and return to the disk's main window.

3. As with the previous software installation, drag the ExSys™ SE Video software into the System folder. If you are using System 7 or later, a dialog box will appear advising you that the file is being placed in the Control Panels folder. Click "OK" or press "Enter" on your keyboard. You may also place the software directly into the Control Panels folder.
4. After installing the software, eject the disk by dragging it to the trash can.
5. Now reboot by choosing "Restart" from the "Special" menu. As the system boots up, hold down the mouse button. After the ExSys™ SE icon appears, you should see an "X" through the ExSys™ SE Video icon. By holding down the mouse button you are preventing the driver for the external monitor from installing into the system. This will allow you to set up the video as described next, then you'll restart one last time to fully install the software.
6. Select the ExSys™ SE Video control panel from the Apple Menu.



The ExSys™ SE Video Control Panel

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7. The control panel displays a diagram showing an SE screen and a second larger screen. It describes both relative position and menu bar placement. **DO NOT MAKE CHANGES TO THE SETUP AT THIS TIME.** Click on the "Options..." button at the lower right side of the dialog box. a list appears showing all of the monitors for which Extreme Systems has written a driver. Scroll through the list until you find the driver for your monitor. If your monitor does not appear, select a "generic" driver which most closely matches your monitors specifications. The generic drivers are located at the top of the list. For the Lapis DPD there are two drivers, allowing you to select the resolution best suited to your needs. Select your monitor by clicking on the name in the list. To close the selection dialog box click "OK" or press "Enter" on the keyboard.

NOTE: If after following the rest of the steps in this section you suspect that the Video software is not set correctly, you may need to open the Video control panel again, then select the monitor list again to see that your monitor has been selected. On occasion the monitor selection does not “take” the first time it is selected, so re-selecting may be necessary.

8. Now you may close the ExSys™ SE Video control panel by clicking on the close box located in the title bar of the open window. You will be presented with a dialog box which will advise you to restart before the changes will take effect.
9. Now shut down your system by selecting "Shut Down: from the "Special" menu.

9. Now shut down your system by selecting “Shut Down: from the “Special” menu.

Your Video software installation is now complete!

Connecting the External Monitor

Finish the monitor installation by connecting the external monitor cable to the external monitor port, which was installed previously in Section 3. There is only one way to connect the cable to the port, since both DB9 and DB15 connectors can only be oriented one way. Make the connection, then plug in your monitor.

Turn on the power to your SE and your monitor. Watch to make sure that both the ExSys™ SE and ExSys™ SE Video icons appear without an "X" through them. The external monitor should now boot as part of the desktop. It will have the same desktop pattern as the internal SE screen. In addition, the mouse should move from one screen to the other.

Customizing your Video Software setup

The ExSys™ SE Video software contains three user-configurable features. These features can be set by opening the Video control Panel and following the instructions for each feature listed below.

Menu Bar Placement

The menu bar may be placed on either the internal or external monitor.



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We recommend that you place the menu on the external monitor, since the VANDAL controls the speed of the external monitor, while the motherboard still governs the internal monitor. Experiment with the menu bar on one then the other to see the speed difference for yourself. You must restart your system for this change to take effect. To move the menu bar, first make sure that both screens are enabled. Then click on the graphic representing the menu bar and drag it to the opposite monitor. You will be advised by a dialog box that your must restart your system for the change to take effect. Once restarted, your system will boot with the menu on the monitor you've just selected.

Relative Monitor Placement

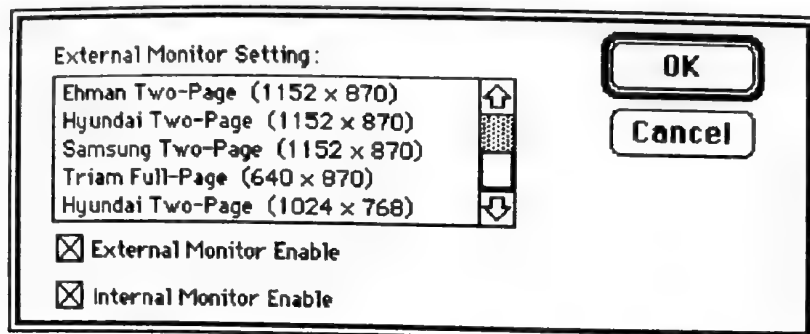
You may change the monitor placement in software to reflect any set up you choose.



The most intuitive way to set this feature is to set up the software to match your physical setup. With both screens enabled, click at the center of either monitor icon and drag it to the desired location. You will be advised by a dialog box that your must restart your system for the change to take effect. Once your system boots up again, use the cursor to determine that the monitor configuration is behaving in the way you anticipated that it would.

Enabling/Disabling Monitors

You may set either or both monitors on depending on your own work habits or needs. With the Control Panel open, select "Options..." at the lower right hand side of the dialog box. Below the scrolling window, which you used previously to select the appropriate external monitor, you will see check boxes allowing you to make the appropriate enable/disable selections.



As you may have already guessed, an "X" in the box indicates "On". Clicking on a box with an "X" in it will turn that monitor off. Turning off the external monitor at this level is equivalent to not installing the ExSys™ SE Video software. As such, if you make this choice and reboot, you will see an "X" through the ExSys™ SE Video icon. As with the other two features, you must reboot in order for any changes you may have made to take effect. After rebooting you will see that the choices you've made in the dialog box are reflected on your screens.

That's it! You are completely through the setup for all of the Extreme Systems hardware and software. If you are not installing Compact Virtual™ you may now get to work on your new system. If you will be continuing by installing Compact Virtual™, we suggest that you use your system for a while before continuing. As mentioned previously, taking this step by step approach will assist in troubleshooting should any problems occur with your System.



You're Done!

Section 6: Using Compact Virtual™

Virtual memory increases the amount of RAM available for the MC68030 microprocessor to use. The SE cannot utilize System 7's built-in virtual memory feature. However, you can put up to 16MB of RAM on the VANDAL accelerator, using Compact Virtual™ from Connectix to address the RAM above the 4 MB limit of the SE. Virtual memory assigned to a hard disk, such as System 7's built in virtual capability, is very slow. Virtual memory assigned to RAM is not as fast as physical, directly accessed RAM, but it is many times faster than virtual memory assigned to a hard disk.

The information here is not a duplication or substitute for the Compact Virtual™ User's Manual. It is provided to assist you specifically with setting up your Compact Virtual software with the VANDAL and its software. The installation and explanation of the features of Compact Virtual™ are covered in the Compact Virtual™ user's guide. As mentioned previously, we strongly urge you to test your accelerator and video setup to insure that they are working before installing Compact Virtual™.

If you are using both an external monitor and Compact Virtual™ version 3.01 or earlier, there is one setting not covered in the Compact Virtual™ User's guide which you'll need to adjust after you've successfully installed the software. In order for your external monitor to function properly, Video RAM needs to be set aside for use by the VANDAL. To accomplish this, first open the "Monitor Settings" option in the Compact Virtual Control Panel. Select "Custom Configuration" from the list of monitors. Enter the following data: Display Base Address \$600000 Address Length \$2FFFFF. As detailed in the Compact Virtual™ user's guide, you will need to reboot your SE system in order to see the changes which you've made take effect. This step is not necessary with Compact Virtual™ version 3.02 or later.

After you have successfully installed the Compact Virtual™ software, look to see how your system has been modified. The Compact Virtual™ icon should appear before either of the Extreme Systems' icons as the system boots. Check the amount of System memory available to you under the Apple menu. If you have 16MB of RAM on your VANDAL you should have an unused block of memory of around 10MB.

If you have any questions related to Compact Virtual™, please refer to your users guide and Connectix before addressing them to Extreme systems. If you believe that your question or problem is related more to the VANDAL or Extreme Systems software, don't hesitate to call Extreme Systems Technical Support.

Section 7: Troubleshooting

If you experience a problem with your new VANDAL upgrade, please attempt to identify and solve the problem by referring to this troubleshooting guide before calling Extreme Systems Technical Support. There are three main categories into which technical difficulties will fall. They are Installation and Operation, External Monitor Setup, and Virtual Memory. As we have tried to emphasize throughout the guide, you should only add or change one aspect of your System at a time. As you may suspect, problems occurring at any one level of installation are easier to solve if you have followed the step by step instructions as laid out in the manual, testing each step as you go. Problems which existed before the VANDAL is installed, such as a formatting problem with a disk drive, may only be intensified by increasing the CPU speed. It is helpful to Extreme Systems Technical Support if you let us know about any problems that you are aware of which may have existed before you installed your VANDAL. Also, try to recreate the problem by booting in 68000 mode, as detailed at the end of Section 1: "Hardware Installation", and try the same sequence with the software removed but the VANDAL still installed.

Extreme Systems Technical Support is working for you!

Each accelerator is tested before it is shipped to a customer. Of all the boards we have shipped, we have had a statistically negligible percentage of board failures. In most cases we will first assume that the accelerator itself is functioning properly, and attempt to help you by asking specific questions about your SE and your software. Many problems have been overcome by reinstalling software programs according to their installation instructions, or by having the computer itself diagnosed. We try very hard to make sure that all

problems are dealt with in a timely and efficient manner. We go to great lengths to see that this happens. If we are unable to solve the problem over the phone, we may ask you to send in your SE for testing. We have never found a problem we couldn't overcome when we had the computer in-house. Please realize that we are on your side, that we value you as a customer, and that we really will try to do everything we can to help you. If you are having trouble, please rest assured that in virtually every technical support case we have handled we have been able to solve the problem and get the customer going full speed again.

Hardware and Software Removal

If you experience a problem which requires the removal of either the hardware, the software, or both, please follow these steps.

Software Removal

Before removing the accelerator from your SE, remove the Extreme Systems software. Do this by simply dragging all three files to the trash. You installed two files manually. The other, ExSys™ SE Preferences, was created automatically by the ExSys™ SE software. If you are using a System prior to System 7, you'll find all three files inside the System folder. Users of System 7 or later will find ExSys™ SE and ExSys™ SE Video in the Control Panels folder inside the System folder, while the ExSys™ SE Preferences will be in the Preferences folder. Empty the trash to get rid of the files as you would with any other Mac file. Now either restart or shut down, depending on the steps you intend to take next

Hardware Removal

With your SE turned off and all cords and peripherals removed, follow the steps in Section 1: "Hardware

Installation" to open up the SE. Detach the external monitor cable from the external monitor port as you detach the other cables from the motherboard. After you have removed the motherboard as described, GENTLY pull up on the VANDAL PDS connector while pushing down on the motherboard. If you will be shipping the VANDAL, please use the materials in which the accelerator was shipped to your originally. This will insure it's safety during transportation. If the original materials are not available, wrap the VANDAL securely in a material such as bubble-wrap or foam, and pack it securely in a sturdy box. Remember to handle the board by the edges only, minimizing the risk of damage to the accelerator. If you have any questions about removing the VANDAL which are not covered by this guide, please call Extreme Systems before proceeding.

Troubleshooting Guide

The section on troubleshooting is laid out in three major sections: Installation and Operation, External Monitor Setup, and Virtual Memory. In each section there are several scenarios, with a problem description first, then suggested solutions. When experiencing a problem, first identify the category of the problem, then search through the problem descriptions to find the situation which best fits the problems you are having. If you are unable to match the problem which you are experiencing with the problem descriptions in this guide, please call Extreme Systems Technical Support. Otherwise, follow the instructions carefully. If problems persist, call Extreme Systems Technical Support.

Installation and Operation

PROBLEM: After installing the VANDAL, the system does not "Beep" when the power is turned on.

- Verify that the power cord is plugged in and connected securely.
- Verify that the sound cable has been reconnected to the motherboard properly.
- Verify that the VANDAL is properly aligned and seated properly on the motherboard PDS connector.
- Verify that the VANDAL spacers have been installed.
- Verify that all motherboard and VANDAL SIMM sockets contain SIMMs, and that they are properly seated.

PROBLEM: The system crashes during the boot sequence and displays the “sad Mac” icon with an error code.

- Verify that you are using SIMMs which are rated for the speed of the VANDAL which you have.
- Verify that all SIMMs have been installed on the VANDAL and motherboard. The VANDAL requires four SIMMs, two on the component side and two on the underside. The motherboard also requires four SIMMs. Refer to your SE user's manual for proper configuration of the motherboard memory.
- Verify that each of the SIMMs has been installed correctly. The SIMMs should lock securely into the socket. Locking tabs should hold the right and left edges firmly in place. The two SIMMs on the component side of the VANDAL lock into position at a 30° angle. The other two SIMMs lock into position parallel to or flat against the VANDAL. Refer to your SE user's guide to verify the positioning of the motherboard SIMMs.

- Inspect the contacts on both the SIMMs and the connectors. Clean the contacts or connectors as necessary, removing any dust particles which may interfere with a good connection.
- Verify that the SIMMs are in proper operating condition.
- If the "sad Mac" still persists, it may be that the SIMMs are defective or that they are not compatible with the VANDAL. SIMMs purchased from Extreme Systems have been tested with the VANDAL prior to shipping.

PROBLEM: After installing the VANDAL and ExSys™ SE software, either the ExSys™ SE icon appears with an "X" through it as you boot up or it does not appear at all.

- Verify that the current system is 6.0.7 or later.
- Inspect the motherboard PDS for dust particles, and make sure that a clean connection is being achieved.
- Remove and reseal the VANDAL on the motherboard to insure that the connector is mating properly.
- Make sure that you have followed the instructions in Section 2: "Extreme Systems Software Installation" carefully, and that all non-Apple Extensions and Control Panels and all virus protection software have been removed to a temporary location while the Extreme Systems software is being installed.
- After the software has been installed correctly, make sure that the Extreme Systems software

loads first or, if Compact Virtual™ is installed, second in the boot sequence. If the ExSys™ SE icon does not boot as detailed above, you must change the name of the file so that it will boot first. To do this, find the file in either the System folder or the Control Panels folder (depending on which System you are using) and place several spaces in front of the ExSys™ SE name. If the problem persists, call Extreme Systems Technical Support.

PROBLEM: After installing the VANDAL and software, a particular third party software application or hardware does not function properly.

- Check the user's manual of the third party product for setup information. Verify that the setup is complete according to the manual. Reinstall the third party product using the original disks or backups of the originals. You may need to temporarily remove any non-Apple Extensions or Control Panels.
- Reinstall the System software. You may need to temporarily remove any non-Apple Extensions or Control Panels. Take care to follow the Apple installation guidelines, especially when upgrading to System 7.1.
- As detailed at the beginning of this section, test the software program or product without the ExSys™ SE software installed, and then in 68000 mode.
- The Kensington Turbo Mouse software does not function with the VANDAL SE system. Use Apple's mouse driver instead of the Kensington software.

- Verify that the third party product is compatible with your current System version.

PROBLEM: After installing the VANDAL, peripheral devices stop functioning. Peripherals include, floppy drives, external drives, and printers.

- Check all cable connections for a proper connection to the SE.
- Reinstall any associated hardware drivers.
- For hard drives, reformat and install a new driver using hard drive configuration software. Use hard drive formatting utilities such as Silver Lining™, Drive 7™, and FWB™. Reformatting hard drives may be required if you are upgrading to new System software, especially System 7.
- Check your peripherals and software for Viruses. Use products like Norton Disk Doctor™ or Disk First Aid™.
- Temporarily remove any hard drive enhancement software, such as capacity increasing or auto compression software. Temporarily remove any virus protection software. Test the VANDAL without the software installed and in 68000 mode as described at the end of Section 1: "Hardware Installation".
- Problem Hard drives may include:
 - Syquest
 - Jasmine (all models)
 - Jasmine Back Pac™ (older models- used with Rodime 45 and 100 MB hard drives)
 - MacBottom (problems have been found with driver software)
 - Mirror M80 (problems have been found

with driver software)

Rodime 45 MB

Rodime 100 MB

Western Digital

Apple HD-20 (non-SCSI model/this is not a reliable boot drive)

Any hard drive using OMTI or ADAPTEC

SCSI controllers

PROBLEM: Occasionally the sound "gets stuck" and continually emits noise.

- This event may occur on the 50MHz version of the VANDAL. Disable the sound by setting the volume to 0 in the sound Control Panel. No other solution currently exists.

External Monitor Problems

PROBLEM: After installing the VANDAL, the external monitor displays a blank screen.

- Check all cable connections, including the 16-position flat ribbon cable connecting the VANDAL and the external monitor port. Note that there is not necessarily a locational relationship between the ports. It is possible to have a setup in which the flat ribbon cable plugs into the port opposite the DB connector. Check the table in Section 4: "External Monitor Port Configuration" to confirm that your settings are correct.
- Check the ExSys™ SE Video software installation. The file should be located in the System folder, and for System 7 or later, in the Control Panels folder. The dual-monitor icon should appear as the system boots up.

Section 7

- Verify that the monitor selection made in the "Options..." dialog of the ExSys™ SE Video Control Panel is correct for the monitor you are using.
- Verify that the "Enable/Disable" setting are correct for the setup you are testing for.
- Adjust the controls on the monitor itself.

PROBLEM: During the boot sequence, the ExSys™ SE Video icon appears with an "X" through it.

- Do not hold the mouse button down during the boot sequence, unless you intend to disable the Video software.
- Verify that the "Enable/Disable" setting are correct for the setup you are testing for.
- Verify that the monitor selection made in the "Options..." dialog of the ExSys™ SE Video Control Panel is correct for the monitor you are using.

PROBLEM: "Noise" appears on the external monitor.

- Check power connections to both the monitor and the SE.
- Physically separate the external monitor and the SE, and point the CRT tubes away from each other. Proximity of other peripherals may also affect the display.
- For dual page monitors, provide power from an unshared outlet. These monitors require more power than the full page monitors. Low power

Virtual Memory Problems

NOTE: Before installing Compact Virtual™ from Connectix, make sure that the VANDAL and external monitor are functioning properly.

PROBLEM: The system crashes while installing Compact Virtual™.

- Check the System version. Compact Virtual™ 3.01 or earlier is not compatible with System version 7.1. Match the appropriate System version with the version of Compact Virtual™.

PROBLEM: After installing Compact Virtual™ the external monitor screen is blank.

- Check the 'Monitor Settings' - "Custom Configuration" settings in the Compact Virtual™ Control Panel. The "Display Base Address" should be \$600000, and the "Address Length" should be \$2FFFFFF.

PROBLEM: A particular third party software/hardware product does not function, or crashes.

- Disable Compact Virtual™ and test the device or program in question. If the problem appears to be caused by Compact Virtual™, call Connectix' Technical Support.

Section 8: Customer Support

We at Extreme Systems are very proud of our products and we are committed to serving our customers. Our technical and customer support have received high marks from Mac publications. Please take a few minutes to fill out the registration card and return it within 30 days of purchase. This will automatically register you for the latest product information and new product releases.

We do not charge for our Technical Support. Our Technical Support phone number is (206) 575-4223. Help is available from 8 A.M. - 5 P.M. Pacific Time. We also have a voice mail system which automatically lets us know when a message has been left. If you call during off hours or find the line busy, please leave a detailed message. We'll get back to you very quickly. We know how frustrating technical problems can be. In most cases, the person returning your call will already have suggestions or solutions if the information you have given is complete.

If you should encounter problems that you're unable to solve with our User's Guide, please have the following information available prior to calling. Leave the information in the voice mail system if you find the line busy.

Mac Platform_____

Accelerator Type_____

Accelerator Serial #_____

ExSys™ SE Software Version_____

System Software Version_____

What did you do once you realized that a problem existed? This is a very important

question since it will be the only way we can trace exactly what took place.

Which application was running at the time you experienced the problem?

Were you able to repeat the problem? Did you test the problem with the VANDAL disabled, as laid out at the end of Section 3? Did you test the problem with the ExSys™ SE software removed?

Did you test the installation of the VANDAL alone, the VANDAL with external monitor, and then Compact Virtual™ as described in the manual?

Which third party external monitor are you using?

Did you purchase your SIMMs from Extreme Systems?

Extreme Systems Technical Support
206-575-4223

Appendix A: Warranty

Extreme Systems offers a Three Limited Year Warranty on its entire Macintosh product line.

What is covered: Hardware defective in workmanship or materials.

Who is covered: You as the original purchaser. Proof of purchase may be requested. If you sell or give this product to any other person or company, that person or company will not be covered under this warranty.

Warranty length: Three years from the original purchaser's date of purchase.

What Extreme Systems will do: Repair or replace the product, at our option, and return it at no charge to the original purchaser. Replace defective user guides or media, and return them at no charge to the original purchaser.

What Extreme Systems will not do: Pay freight, shipping or insurance charges for product which you own to be returned to us. We cannot accept responsibility for loss or damage while in transit to us. If the accelerator is defective, or if responsibility for the problem rests with us, we will cover all shipping costs after the repairs have been completed.

Your responsibilities as owner

Mail your Warranty Registration Card within thirty (30) days of the date of purchase..

All returns must be authorized by Extreme Systems prior to your returning any product. You must call (206) 575-2334 for a Returned Merchandise Authorization (RMA) number. This helps us track the accelerator once it arrives, so that you receive the best service possible.

Please have your serial number ready before you call.

The RMA number must be clearly written on the outside of the package for the shipment to be accepted by Extreme Systems. You must ship freight prepaid and insure the package or accept responsibility for loss and damage in transit. Again, if there is a problem for which we are responsible, we will cover all shipping charges after the problem has been solved.

All returned product must be in it's original shipping container with all packing materials, consumables and original packing list or proof of purchase included.

This warranty does not apply if the product has been damaged by misuse, accident, modification, unauthorized repair or improper packaging.

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This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

EXTREME SYSTEMS
1050 Industry Drive
Tukwila, WA 98188
(206) 575-2334

Appendix B: Software License

This license agreement represents the entire agreement concerning the program between you and Extreme Systems (referred to as licensor), and it supersedes any prior proposal, representation, or understanding between the parties. By opening the package containing the program, you are accepting and agreeing to the terms of this license agreement. If you are not willing to be bound by the terms of this License Agreement, you should promptly return the package in unopened form, and you will receive a refund of your money.

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Upon loading the Software into your computer, you may retain the Program Diskettes for backup purposes. In addition, you may make one copy of the Program on a second set of diskettes for the purpose of backup in the event that the Program Diskettes are damaged or destroyed. You may make one copy of the User's Guide for backup purposes. Any such copies of the Program or the User's Guide shall include Licensor's copyright and other proprietary notices. Except as authorized under this paragraph, no copies of the Program or any portions thereof may be made by you or any person under your authority or control.

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Limited Warranty. Licensor warrants, for your benefit alone, that the Program Diskettes in which the computer software is embedded and the User's Guide shall, for a period of 90 days from the date of commencement of this License Agreement (referred to as the Warranty Period), be free from defects in material and workmanship. If, during the Warranty Period, a defect in the Program appears, you may return the Program to Licensor for either replacement or, if so elected by Licensor refund of amounts paid by you under this License Agreement. You agree that the foregoing constitutes your sole and exclusive remedy for breach by Licensor of any warranties made under this Agreement. Except for the warranties set forth above, the Program, and the Software contained therein, are licensed "as is," and licensor disclaims any and all other warranties, whether express or implied, including (without limitation) any implied warranties of merchantability or fitness for a particular purpose.

Limitation of Liability. Licensor's cumulative liability to you or any other party for any loss or damages resulting

from any claims, demands, or actions arising out of or relating to this Agreement shall not exceed the license fee paid to Licensor for the use of the Program. In no event shall Licensor be liable for any indirect, incidental, consequential, special, or exemplary damages or lost profits, even if Licensor has been advised of the possibility of such damages.

Some states do not allow the limitation or exclusion of liability for incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Governing Law. This License Agreement shall be construed and governed in accordance with the laws of the State of Washington.

Costs of Litigation. If any action is brought by either party to this License Agreement against the other party regarding the subject matter hereof, the prevailing party shall be entitled to recover, in addition to any other relief granted, reasonable attorney fees and expenses of litigation.

Severability. Should any term of this License Agreement be declared void or unenforceable by any court of competent jurisdiction, such declaration shall have no effect on the remaining terms hereof.

No Waiver. The failure of either party to enforce any rights granted hereunder or to take action against the other party in the event of any breach hereunder shall not be deemed a waiver by that party as to subsequent enforcement of rights or subsequent actions in the event of future breaches.

Appendix C: Technical Specifications

CPU

MC68030 operating at 33,40 or 50MHz
Built-in PMMU, 256 byte internal instruction cache,
256 byte internal data cache

FPU

MC68882 operating at 33,40 or 50MHz

RAM

4 Meg (4x1Mbyte 80ns (33MHz), 70ns (40 and 50MHz)
SIMMs on VANDAL, motherboard memory stays in
place)
16 Meg (4x4Mbyte 80ns (33MHz), 70ns (40 and 50MHz)
SIMMs, with 4Mbyte accessible by OS, 12Mbyte accessible
using Compact Virtual 3.0)

VIDEO

Built-in monochrome video support for 3rd party single
page and dual page monitors.

POWER

6.9 Watts @ 50MHz with MC68882 installed and video
running

SOFTWARE

Software drivers install as Control Panel documents
Requires System 6.0.7 or greater

Accelerator Software Features

Cache Control

Independent control of MC68030 instruction
and data caches

ROM to RAM

Copy ROM to RAM to improve the speed of
system routines

QuickSane™

Enhanced SANE routines to speed up math
functions over Apple's SANE routines

OS Patches

Patches to Apple's operating system (versions

OS Patches

Patches to Apple's operating system (versions 6.0.7 and greater) to provide support for AppleTalk and Sound routines

Video Software Features

Screen Select

Use internal SE, external FPD/DPD or both simultaneously

Menu Position

Place the menu bar on either the internal or external screen

Screen Position

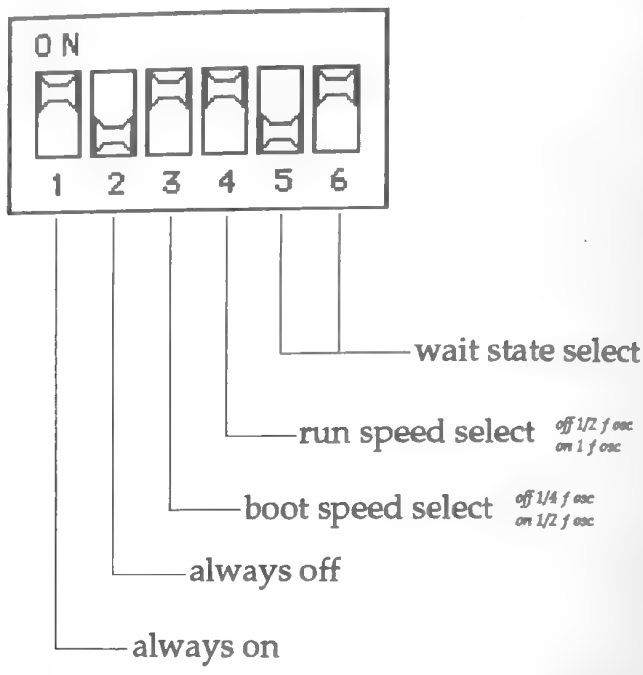
Locate the external screen on either side or above or below the SE screen

Monitor Type

Select from a variety of 3rd party monitors from the Control Panel

Appendix D: Dip Switch Positions

The VANDAL accelerator contains several hardware configuration modes which are controlled by the DIP (dual in-line package) switches located on the VANDAL. These switches are factory set and should not be altered. The data in this appendix is for your information only.



f is the speed or frequency in MHz of the on-board oscillator.

Switches 5 and 6 control the number of MC68030 processor wait states (or processor clock periods) that are generated while accessing the VANDAL RAM. Also, the burst mode pattern of clock cycles for the MC68030 is controlled by the switch settings. Optimal performance of the VANDAL can be achieved by selecting the least number of wait states without causing errors in RAM accesses. Table 2 shows the number of wait states and the burst mode pattern for each switch setting. There are no units for the values in Table 2, the values are the number of wait states or processor clock cycles.

DIP Switch 5	DIP Switch 6	Number of Wait States	Burst Mode Pattern
off	off	1	4-2-2-2
on	off	3	6-2-2-2
on	on	3	6-3-3-3
off	on	5	8-3-3-3

The number of wait states needed is a function of the processor speed and the access time of the VANDAL RAM. Table 3 shows the recommended number of wait states needed for several RAM access times and processor speeds.

RAM Speed (in ns)	33MHz Run Speed	40MHz Run Speed	50MHz Run Speed
60	1 or 3	3	5
70	3	3 or 5	5
80	3	nr	nr
100	nr	nr	nr
120	nr	nr	nr

Appendix E: Glossary of Terms

AppleTalk

Apple's communications system for network software and hardware.

Cache memory

High speed memory used in conjunction with the computers regular memory to improve the performance of the computer.

CMOS

Complimentary Metal Oxide Semiconductor. Manufacturing process for creating integrated circuits and transistors used in your Macintosh.

CPU

Central Processing Unit. The Integrated Circuit or chip that runs your Macintosh computer.

DRAM

Dynamic Random Access Memory. An Integrated Circuit designed to be a memory chip. Usually the primary type of memory in your computer. Normally requires additional integrated circuits to "refresh" it's contents.

FPU

Floating Point Unit. Sometimes called a "math" chip. An Integrated Circuit designed to enhance mathematical calculations. Operates in tandem with your computer's CPU.

Mb

Megabyte. A measurement of storage capacity.

PDS

Processor Direct Slot. The 96 Pin connector into which your VANDAL accelerator is installed.

PMMU

Paged Memory Management Unit. An Integrated Circuit designed to provide virtual memory management for your Macintosh when used with the System 7.0 software. Also used with the Apple A/UX operating system.

RAM

Random Access Memory. An Integrated Circuit designed to be a memory chip. RAM temporarily stores data which is then erased when the power is turned off. It is very fast but volatile.

ROM

Read-Only Memory. An Integrated Circuit designed to provide permanent storage of data or program information for your CPU's operation.

Virtual Memory

A method for using hard disk space or, in the case of the VANDAL, RAM that is not directly accessed by the system as available system RAM. The SE cannot take advantage of System 7's built in virtual memory. In order to use virtual memory on an SE, you must use Compact Virtual from Connectix Corporation.

Wait State

Usually attributed to the interaction between your Macintosh CPU and it's associated memory (RAM). Allows slower memory chips, RAM, to operate with faster CPU chips.



EXTENDER	IMPACT 030	IMPACT RGB	ACCOMPLICE	VANDAL
LC	LC LC II Performa 400 Color Classic	LC LC II Performa 400 Color Classic	Si	SE



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